Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:	)	
	)	
Connect America Fund	)	WC Docket No. 10-90
	)	
Developing a Unified Intercarrier Compensation Regime	)	CC Docket No. 01-92
	)	

DECLARATION OF ADAM UZELAC

1. My name is Adam Uzelac and I am Principal Network Architect at CenturyLink. I have held this position for either CenturyLink or Level 3 Communications, LLC since 2012. Prior to joining Level 3, I worked at Global Crossing as the Director of Network Architecture and Engineering. Before that, I held positions in engineering at Frontier.

2. This declaration is intended to support the Petition for Declaratory Ruling filed by CenturyLink regarding the application of Section 51.913 of the Commission's Rules. I am familiar with the technical aspects of the petition as well as with the Commission's prior orders regarding the relevant rule.

3. The key issue raised in CenturyLink's petition is what constitutes the functional equivalent of end office local switching, for which an incumbent LEC assesses a charge pursuant to Section 69.106 of the Commission's rules, when a LEC partners with an over-the-top VoIP provider that exchanges traffic with the Public Switched Telephone Network ("PSTN").

4. In its 2015 order, FCC 15-14, the Commission determined that call control functions, including call set-up, supervision, and management provided jointly by a LEC and its VoIP partner are the functional equivalent of end office local switching in a time division multiplexed circuit switched ("TDM") network. This conclusion correctly recognized these core

functions of the end office local switch. Though, as the D.C. Circuit noted, all switches perform functions related to call set up and control, the end office local switch performs specific and unique functions that are not replicated by remotes, tandems, or the SS7 network.

5. The relevant routing devices in a TDM network, including remote concentrators end office local switches, and tandem switches, are all computers in a TDM network. All of these elements move traffic from one set of lines to another, either aggregating or disaggregating traffic, depending on which side of the call (i.e., originating or terminating) the switch is located. Thus, a remote concentrator takes traffic from a number of drop lines and concentrates that traffic onto a feeder line; a local switch takes traffic from a number of feeder lines and concentrates them further before sending them to the tandem switch; and a tandem switch takes traffic from multiple local switches and further concentrates it for transmission to interexchange carriers (or long distance calls) or for routing to a local end office switch for termination.

6. Beyond that articulation of the general functions of switches and concentrators, however, each of those routing devices performs different functions in the process of moving that traffic. Thus, in a TDM network, when a caller picks up a handset and dials a number, each of the remote concentrator, end office and tandem switches, and the SS7 network play different roles in originating that call.

a. The end office local switch is the device that notices that the caller has picked up the handset and that signals the network the desire to place a call, to which the network plays out a dial tone in confirmation of the request. The end office local switch also receives and initially processes the dialed/outpulsed digits to determine where and how to forward or "route" the call. When toll traffic transits this switch on an incumbent

LEC's network, it is subject to the charges prescribed in Section 64.106 of the Commission's rules, provided the LEC has filed an appropriate tariff.

b. In contrast, the remote concentrator does not perform these functions. Rather, the remote concentrator funnels traffic from the end user's handset to the upstream end office local switch. It does not inspect or process dialed digits in order to determine where to forward or route the call.

c. Nor does the tandem signal the network to generate dial tone or process dialed digits. By the time call traffic has reached the tandem, the dialed digits have already been collected and translated into a network destination address. The tandem receives the addressed traffic and sends it on to its destination.

d. Similarly, the SS7 network does not act independently of the end office local switch. Rather, in a TDM network, the SS7 network acts at the request of the end office local switch. Once the local switch receives the dialed digits, it signals the SS7 network to begin the process of setting up the actual call path—which the SS7 network does using the information provided by the end office local switch.

7. Each of these TDM network functions is replicated in the other direction on the terminating end of the call. At the terminating end, the tandem switch receives the addressed traffic and sends it on to the end office switch that transmits the call its destination. The end office local switch typically monitors the called party's line to determine if the called party answers, and, if the call is answered, signals the SS7 network that the call has been answered while also monitoring the line to see when the called party hangs up. Neither the tandem switch nor the SS7 network performs these functions.

8. In an IP network, where a VoIP provider offers "over the top" service and has partnered with a LEC to interconnect and exchange traffic with the PSTN, these core "end office" functions described above are all provided by the over-the-top VoIP provider and its LEC partner—in combination. These functions are *not* performed by the ISP that provides the internet connectivity over which an over-the-top VoIP call may ride. That may be the case in the context of "facilities-based" VoIP, such as where the VoIP provider and the network that operates the last-mile transmission facilities are the same entity (*e.g.*, where a cable operator also provides VoIP service). Even in that case, though, these functions are performed by separate equipment owned by the last-mile provider and attached to the network of the last-mile provider. But for over-the-top VoIP, the ISP typically does nothing more than pass a stream of undifferentiated packets through its network.

9. In the over-the-top VoIP context, the IP equivalent functionality of the core TDM end office functions described above—detecting off-hook, initiating call set-up, processing of dialed digits to determine the network address to which the call will be routed, directing of the SS7 network, monitoring answer supervision, providing an answer message and detecting call termination—are all performed by the VoIP provider and its partner LEC. Specifically, where an over-the-top-VoIP-originated call is destined for a called party on the PSTN, the call session is initiated when the customer inputs the dialed digits of the called party into the customer premises VoIP device or application. The device or application, in turn, contacts the VoIP provider's host server using the server's Uniform Resource Locator, or URL. The VoIP provider provides VoIP service at the application layer, and thus has the responsibility for managing and configuring the VoIP service. The ISP simply provides the transmission of packets on which the application rides. Once the VoIP provider's VoIP server receives the call invitation message, the VoIP

provider extracts the telephone number and determines the most appropriate route to the called party. In the case of a call where the called party is located on the PSTN and goes through a LEC partner (the type of calls at issue here), the VoIP provider's VoIP server re-packages the message payload and routes it to its LEC partner. The LEC partner then performs the other equivalents to the core end office steps described above—for example, determining the endpoint address on the PSTN for the call at issue and initiating the SS7 messages to set up the remainder of the call.

10. Each of these IP network functions is replicated in the other direction on the terminating end of the call—*i.e.*, where a PSTN-originated call is destined for a called party that is a customer of the over-the-top VoIP provider. In these instances, the originating carrier on the PSTN generates an SS7 message that directs the call to the LEC partner over the traditional TDM network functionality described above. Once the call reaches the LEC in TDM form, it is converted to IP and delivered to the VoIP provider's host server and, in turn, to the customer's VoIP application at the customer's location. In this call flow, the VoIP provider/LEC partner in combination perform the equivalent of monitoring the called party's line to determine if the called party answers, providing an answer message, and detecting call termination. Specifically, the VoIP provider's server, in this context, receives the call invitation and, based on the state of the customer's VoIP application (*e.g.*, ready, offline or busy), reacts accordingly (*e.g.*, ring, send to voicemail, etc.). Other call termination functionality varies based on the type of device or application the customer is using but, in all cases, that functionality is provided by the VoIP provider, or by the customer that has received the call.

11. As was demonstrated in Paragraph 6, above, the end office core functions described in Paragraph 10 are not performed by the tandem switch in a TDM network. The same

is true for VoIP calls in an IP network. Thus, the element of the IP network that performs such functions is not the functional equivalent of a tandem switch (though LEC partners/VoIP providers may, in some cases, also perform tandem functions). Rather, it is the functional equivalent of an end office local switch.

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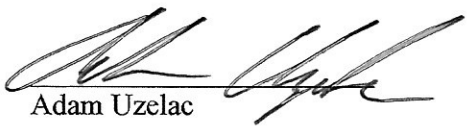
I declare under penalty of perjury that the foregoing is true and correct.

Executed on May 11, 2018



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